Magnum ES42

| Office and Wiring Closet | Hardened for Factory Floor | Premium-rated for Outdoors |

Features

- Provides six switch ports, one or two of which may be 100 Mb fiber, others are 10/100 copper

- Three models for three application environments:
  - Office, wiring closet
  - Factory floor
  - Outdoors

- Includes Link-Loss-Learn (LLL) feature for use in self-healing LAN structures

- AC power for all models, Factory floor and Outdoor models also have integral DC terminal blocks and Power Alarm Relay

- Packaging and mounting options are similar to the popular Magnum 14-Series Converter Switches

Magnum™ ES42 Edge Switches go out where the action is. In heavy-duty industrial applications, Ethernet LANs increasingly are used where small groups of nodes at the edge need to be connected into larger LAN structures. The Magnum ES42 , a versatile family of small Edge Switches, uses the latest networking technology and innovative product packaging features to serve edge-of-the-network applications.

The compact ES42 Edge Switch design delivers 6 Ethernet ports. The base models have either two 100 Mb fiber and 4 10/100 copper ports, or one fiber and five copper ports, or 6 copper ports. Fiber port choices cover all multi-mode and single-mode fiber connector types. Power input selections include AC or DC (or both) with 12V, 24V and 48V DC terminal block models for all industrial application environments.

Extending the range of the popular Magnum CS14 Converter Switches, the Magnum ES42 Edge Switches are similarly available in regular (office), Hardened (factory floor), and Premium-rated (outdoor) versions. This selection of models and fiber port types offers the best price-to-value ratio for each installation.

The Magnum Edge Switches include Link-Loss-Learn (LLL), enabling them to be used in self-healing and redundant LAN structures. The LLL feature causes ES42 Switches to sense Link Loss or standard STP / RSTP reconfiguration signals on designated ports, flush internal address buffers to permit a change in LAN packets flow, and pass the reconfiguration signal down the line to other products in the redundant network structure. Magnum Edge Switches, combined with managed switches running STP or RSTP or S-Ring, can often provide high availability redundant LANs at lower total cost than was previously possible.

The Magnum ES42H Hardened units are for factory floor applications. The ES42H models are built with high-grade components and are constructed using special thermal techniques (patent pending) and a metal case for heavy-duty industrial jobs. In addition to a Hardened AC power option and jack, terminals for internal DC power choices at 8 to 15V, 24V or -48V DC are included. Two terminals provide connections to monitor an internal power-sense relay. The ambient temperature rating is for industrial use. No internal air flow is required for cooling, so it resists dust, dirt, moisture, smoke and insects. Mounting choices include stand-alone panel-mounting, DIN-Rail, or rack-mount tray.

The Magnum ES42P Premium-rated units are for temperature uncontrolled sheltered applications, typically located outdoors. The ES42P models are built with premium-grade extended temperature components, and use similar thermal techniques (patent pending) as the ES42H Hardened units. In addition to a Premium-rated AC power option and jack, terminals the power-sense relay and for internal DC power choices at 8 to 15V, 24V or -48V DC are included. When used outdoors, the ES42P should be sheltered from the elements. Mounting choices include stand-alone panel-mounting, DIN-rail, or rack-mount tray.

All ES42 Edge Switch models come with two (2) sets of LED indicators. One set is on the front for viewing convenience when the unit is DIN-Rail or wall-mounted, and one LED set is mounted in the end adjacent to the ports for easy viewing when units are in a rack-mount tray. The Magnum ES42 Edge Switches and other Magnum products are designed and manufactured in the USA and backed by a three-year warranty.

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Industrial Networking at Its Best™

PERFORMANCE:
Fiber ports: 100Mb, all types of connectors for m-m and single-mode
Fiber ports are factory set for FDX. RFQ for internal settings at HDX
RJ-45 Ports Data Rate: 10 / 100 Mbps, FDX and HDX modes.
   Auto-negotiation and auto-cross MDI-MDIX on all RJ-45 ports
      Occurs at LINK-enable. No cross-over cables required.
Non-blocking switching, 128KB packet buffer memory
Address buffer storage = 2K addresses
Address buffer age-out time = 300 seconds (see also LLL)

NETWORK STANDARDS:
Ethernet IEEE 802.3, IEEE 802.3u; 100BASE-TX, 10BASE-T,
100BASE-FX
LLL (Link-Loss-Learn)
SUPPORT: Factory default is Activated on Ports 1 and 2.
**   RFQ for other Activated Ports selections.**
On Activated Ports, when a Loss of Link or reconfiguration BPDU for STP or RSTP is detected, the ES42 will flush internal address buffers and will pass the signal to other LLL Activated ports. This enables the ES42 to change the direction of packets flow and propagate the self-healing reconfiguration signal down the line.

OPERATING ENVIRONMENT:
Ambient Temperature ratings:
   ES42P: IEC 60068 Operating Temp. per "Type Test" -50° to 100°C
UL 60950 "Component Parts" temperature rating: -40° to 75°C
   ES42H: IEC 60068 Operating Temp. per "Type Test" -40° to 85°C
UL 60950 "Component Parts" temperature rating: -25° to 60°C
   ES42: the ambient temperature rating is 0°C to 40°C.
Storage temperature, all models: -40° to 185°F (-40°C to 85°C)
Cold start: ES42H model to -20°C, ES42P model to -40°C
Ambient Relative Humidity, all models: 5% - 95% (non-condensing)
Altitude, all models: -200 to 50,000 ft. (-60 to 15,000m)
Conformal coating (humidity protection) optional, request quote.

PACKAGING:
Enclosure: Robust sheet metal (aluminum)
Dimensions of units: 3.6 in H x 3.0 in W x 1.7 in D (9.2 cm x 7.6 cm x 4.3 cm)
Weight: ES42 Switch Units: 9.5 oz (270g)
   Power Supply - d, i: 5.8 oz (165g)
   Power Supply - Hd, Hi: 5.8 oz (165g)
   Power Supply - Pd, Pi: 7.9 oz (225g)
Cooling Method: Convection on regular model, case used as heat sink on H & P models.
H&P models: IEC 529 rated IP40

MOUNTING FOR ES42 FAMILY OF SWITCH UNITS:
Metal panel mounting clips: included
DIN-Rail mounting option:
      Model # DIN-RAIL MC2, illustrated here;
Rack-mount option: Model MC14-TRAY.
      Depth: 6.0", Width 17",
      Height 2.25"(15 cm D x 43cm W x 5.7cm H)

FIBER PORT CONNECTORS:
"ff" selections of the "fiber flavor" (see table below):
 Use 2ff for a 2-fiber 4-copper model, 1ff for 1-fiber 5-copper model
 No entry in the "ff" field designates a 6-copper port ES42 Switch.
"1SC" or "2SC"= 100BASE-FX-SC: FO multi-mode with SC type, 2 km
"1ST" or "2ST"= 100BASE-FX-ST: FO multi-mode with ST type, 2 km
"1MTRJ" or 2MTRJ" = 100BASE-FX-MTRJ: FO m-mode w/ MTRJ, 2 km
"1MLC" or "2MLC" = 100BASE-FX-MLC: FO multi-mode with LC, 2Km
"1SSC" or "2SSC" = 100BASE-FX-SSC: FO single-mode with SC, 20 km
"1SSCL" or "2SSCL"= 100BASE-FX-SSCL: sgl-m SC Long Reach 40 km
"1SST" or "2SST" = 100BASE-FX-SST: FO single-mode with ST, 20 km
"1SLC" or "2SLC" = 100BASE-FX-SLC: FO sgl-m with LC-type, 15 km
         For other fiber connector types, request quote.

RJ-45 PORT CONNECTORS:
RJ-45 with auto-cross, 100BASE-TX and 10BASE-T: shielded 8-Pin female. Supports shielded (STP) and unshielded (UTP) Cat. 3, 4, 5. For PoE Pass-through option on H and P models, request quote.

LED INDICATORS, dual, top front and in end:
POWER: ON for power applied
10/100 per RJ-45 port: Steady ON for 100 Mb, OFF for 10 Mb speed
LK/ACT per port: Steady ON for LINK with no traffic, blinking for Activity.
F/H per port in end: Steady ON for F/D mode, OFF for H/D mode.

POWER SUPPLIES for AC (EXTERNAL):
Power input DC jack (8 to 15V) is 2.5mm, center +ve, with 6ft. DC cord
Input: 95-125vac at 60 Hz for "-d" models, 215-240vac at 50 Hz
for "-i" models that have IEC power connector in the ext power unit.
 Input: 100-240vac at 47-63 Hz for "-Hd", "Hi" models, see footnote 1
 Input: 100-240vac at 47-63 Hz for "-Pd", "Pi" models, see footnote 2

POWER INPUT OPTIONS for DC:
12V DC, internal (range of 8.0 to 15V DC), built-in screw terminal
      block for +, -, ground. The 12V DC jack is also present.
24V DC internal (range of 10 to 36V DC) built-in screw terminal
      for +, -, ground. The DC jack is also present, see footnote 3
-48V DC internal (range of 30 to 60V DC), built-in screw terminal
      block for +, -, ground. The 12V DC jack is also present.
Note1: the 12V DC jack can be used for dual source DC power input
Note2: internal DC power floats, user may ground + or – if desired.

POWER CONSUMPTION: all models: 7.0 Watts typical. 9 Watts max.

ALARM TERMINAL BLOCK, H and P Models, two screw terminals:
Internal 60VA relay contact: Open for Power Off, Closed for Power On

AGENCY APPROVALS AND STANDARDS COMPLIANCE:
UL listed (UL60950), cUL, CE, Emissions meet FCC Part 15, Class A. (see footnote 4)
IEC61850 EMC and Operating Conditions Class C for Power Substations
H and P models: IEEE 1613 Env. Std for Electric Power Substations
NEBS L3 and ETSI compliant including vibration, shock, and altitude
P model: NEMA TS-2 and TEES for traffic control equipment
P model: designed for above-the-ceiling (plenum) installation
All models: compliant with EN50155 Railway Applications Standard

WARRANTY:
Three years   Made in USA

1: External 12V1A power supply, wall plug or power cord for North America AC receptacles. Temperature rating same as ES42H, see above. (North America: for spare, order Model PSH-12V1A-Hd. Intl: order Model PSH-12V1A-Hi with IEC plug).
2: External 12V1A power supply, rated for outdoor temperatures same as ES42P, see above. Universal AC input with recessed IEC plug. (North America: for spare, order Model PSP-12V1A-Pd, Intl: order Model PSP-12V1A-Pi with IEC plug).
3: For dual source 24V power input to DC jack, order Model DUAL-SRC-24KIT.
4: These products are tested are approved under IEC61850 for use in Class C sheltered locations where neither temperature nor humidity is controlled. The equipment needs to be protected against solar radiation, rainfall, other precipitations, and wind. UL has not approved these products for Annex-T outdoor use.

Model No.	AMBIENT TEMPERATURE			ALARM CONTACT	POWER INPUT						MOUNTING
	0° to 40°C	-25° to +60°C	-40° to +75°C	2 position term. block	d,i AC external	Hd, Hi AC external + 12V T.B.	Pd, Pi AC external + 12V T.B.	12V DC Term. Block	24V DC Term. Block	-48V DC Term. Block	Panel Clips included or DIN-Rail
ES42-ff-d, i	X				X						X
ES42H-ff-Hd, Hi		X		X		X		X			X
ES42H-ff-12VDC		X		X				X			X
ES42H-ff-24VDC		X		X					X		X
ES42HR-ff-24VDC		X		X					X		DIN-Rail
ES42H-ff-48VDC		X		X						X	X
ES42P-ff-Pd,Pi			X	X			X	X			X
ES42P-ff-12VDC			X	X				X			X
ES42P-ff-24VDC			X	X					X		X
ES42PR-ff-24VDC			X	X					X		DIN-Rail
ES42P-ff-48VDC			X	X						X	X

■ Office & wiring closet   ■ Factory Floor   ■ Outdoors

Magnum ES42 Edge Switches Configuration Guide

1.) **Select your application environment:** a.) Office Grade (0° to +40°C), b.) Hardened/Factory Floor Grade (-25° to +60°C), or c.) Premium/Outdoor Rated (-40° to +75°C).

2a.) **Select number of fiber ports.** All ES42 Edge Switches have six ports—of which 0, 1, or 2 ports can be fiber.

2b.) **Select fiber port(s) type (if any)**
"ff" selections of the "fiber flavor":
"ST"= 100BASE-FX-ST: fiber optic multi-mode with ST type, 2 km
"SC"= 100BASE-FX-SC: fiber optic multi-mode with SC type, 2 km
"SSC"= 100BASE-FX-SSC: fiber optic single-mode with SC, 20 km
"SSCL"= 100BASE-FX-SSCL: fib. op. single-mode SC, "Long Reach" 40 km
"SST"= 100BASE-FX-SST: fiber optic single-mode with ST type, 20 km
"MTRJ"= 100BASE-FX-MTRJ: fiber optic multi-mode w/ MTRJ, 2 km
"MLC"- 100BASE-FX-MLC: fiber optic multi-mode with LC-type, 2 km
"SLC"- 100BASE-FX-SLC: fiber optic single-mode with LC-type, 20 km

3.) **Select power type:** 12VDC, 24VDC, 48VDC, 115VAC(d), 230VAC(i)
Notes: a.) When ordering 24VDC hardened or premium models, an HR or PR version is available that includes the DIN-Rail bracket attached. b.) When ordering hardened or premium AC models, the external power supply has an –Hd or -Hi OR a –Pd or -Pi to designate the level of power supply hardening. These AC models include an external 12vdc terminal block in addition to the external AC power supply jack.

4.) **Examples:**
Factory hardened, panel mount ES42 w/115 VAC power and no fiber ports =***ES42H-Hd***
Premium rated ES42 w/ 2 multi-mode SC fiber ports & 24VDC with DIN-Rail bracket=***ES42PR-2SC-24VDC***
Office grade, panel-mount ES42 w/ 1 multi-mode MTRJ fiber port & 48VDC=***ES42-1MTRJ-48VDC***

5.) **Mounting Hardware for Edge Switches (panel mount brackets are standard)**
DIN-RAIL-MC2 DIN-Rail mounting hardware for "14-series" CS or MC or ES42/ESD42 Switches.
DUAL-SRC-24KIT Cable kit for 24VDC input to the DC power input jack of one ES42/ESD42, any 24VDC model
MC14-TRAY Rack-mount tray for "14-series" CS or MC or ES42/ESD42 Switches, 2.25"H, up to 16 units mix-match
MC14-TR+PS9 Same as MC14-TRAY, but includes the 9vdc PS and ten connectors for CS14, CSN14, 14E, ES42/ESD42 types. The power supply is auto-ranging 110-240vac, 50-60Hz, rated at 40 watts and 50°C.
MC14-TR+PS9X2 Same as MC14-TR+9PS, but with 2nd 9vdc PS and 2 groups of 8 connectors for 14-series, CS, and ES.

Model Number	Ambient Temp			Power Input						Mounting
	0° to +40° C	-25° to +60° C	-40° to +75° C	d,i AC exter-nal	Hd, Hi external +12V Term. Block	Pd, Pi AC +12V Term. Block	12V DC Term. Block	24V DC Term. Block	-48V DC Term. Block	Panel Clips incl. or DIN-Rail Bracket
Office Grade/Wiring Closet (ES42-)										
ES42-*ff*-d, i	X			X						X
Hardened for Factory Floor (ES42H-)										
ES42H-*ff*-Hd, Hi		X			X		X			X
ES42H-*ff*-12VDC		X					X			X
ES42H-*ff*-24VDC		X						X		X
ES42HR-*ff*-24VDC		X						X		DIN-Rail
ES42H-*ff*-48VDC		X							X	X
Premium Rated for Outdoors (ES42P-)										
ES42P-*ff*-Pd, Pi			X			X	X			X
ES42P-*ff*-12VDC			X				X			X
ES42P-*ff*-24VDC			X					X		X
ES42PR-*ff*-24VDC			X					X		DIN-Rail
ES42P-*ff*-48VDC			X						X	X